UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,506	08/22/2003	Toshihiro Tsumori	5576-151	9660

7590 07/22/2004

Myers Bigel Sibley & Sajovec
Post Office Box 37428
Raleigh, NC 27627

EXAMINER	
FALASCO, LOUIS V	
ART UNIT	PAPER NUMBER
1773	

DATE MAILED: 07/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/646,506	TSUMORI, TOSHIHIRO	
	Examiner	Art Unit	
	Louis Falasco	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) *3-12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 2* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

CLAIMS

The claims are 1 to 12.

RESTRICTION OF INVENTION

Restriction

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1 and 2, drawn to a magnetic disk substrate, classified in class 428, subclass 694SG.

II. Claims 3 to 12, drawn to a method of plating, classified in class 427, subclass 523.

Inventions of Group II and Group I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process such as painting a layer on or dip coating.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their differing classifications and recognized

divergent subject matter and unduly add burden to examination, restriction for examination purposes as indicated is proper.

During a telephone, conversation with applicant's representative Michael Sajovec on July 12, 2004 a provisional election was made with traverse to prosecute the invention of Group I, article claims 1 and 2. Affirmation of this election must be made by applicant in replying to this Office action. Claims 3-12 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

ACTIONS ON MERITS

Statutory Basis

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Objection to the specification

The drawings are objected to because Fig. 2 and 3 should be referred to as *PRIOR ART* since applicant has referred to them as conventional in the instant BRIEF DESCRIPTION OF THE DRAWINGS.

Corrected drawing sheets are required in reply to the Office action[1].

~~~~~~~~

Statutory Basis

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Rejections

1. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Lambeth et al** (US 6248416) with **Futamoto et al** (US 6686070).

[1] Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action.
~~~~~~~~

Lambeth et al teaches a magnetic recording disk medium that includes a ***Si*** single crystal substrate, a metallic underlayer and a soft magnetic layer.

Lambeth et al shows magnetic recording disk medium, including perpendicular magnetic recording media, including a single crystal ***Si*** substrate (col. 8 lns 1-5) with a surface roughness (***Rms***) within the claimed 1nm - $1x10^3$ nm limits (col. 15 ln 66 - col. 16 ln 3), and shows this to solve the problem of noise spikes (col. 7 ln 10).

Lambeth et al also shows an underlayer composed of the materials included by the instant claims (col. 7 lns 62-64) having the thickness within the instant claim limits (col. 16 lns 48-50, Table II).

Lambeth et al also includes a soft magnetic layer (col. 8 lns 61,62 and col. 24 lns 38-42) in the magnetic recording disk medium.

Lambeth et al differs from what has been claimed by not expressing the dimensions (diameter and thickness) of the magnetic recording disk substrate, metal underlayer and soft magnetic layer. However, **Futamoto et al** shows that the specific thickness and diameter in the claims as conventional in the art - as seen in any of Ex. 1, 4 & 5 and at col. 11 lns 15-28.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to adopt the **Futamoto et al** size preferences for magnetic recording medium in the **Lambeth et al** magnetic recording medium for providing the medium with sufficient sensitivity for recording and play back. One skilled in the art would

have been motivated to adopt the **Futamoto et al** size preferences for magnetic medium with the expectation of increasing the density while decreasing the noise of the recording media as shown in Figs. 4, 5 and 8 and col. 2 lns 40-60 **Futamoto et al**.

Both **Lambeth et al** and **Futamoto et al** show forming the layers of the recording material by sputtering, while applicant calls for the medium to be a product of a 'plating' process. The **Lambeth et al** and **Futamoto et al** medium however, appears to produce a product identical or only slightly different in structure since the sputtering process results in a precisely formed coating. Additionally a product produced by sputtering, 'sputtering' also known in the art as 'ionic platting' as evident from reference cited as being of interest at the end of this action, is produced in a polarized energetic medium by ions. While the sputtering medium is gaseous, it would be expected to would produce a coat like that of the instant disclosed plating[2].

2. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Lambeth et al** with **Futamoto et al** as applied in the rejection of claims 1 & 2 above, and

[2] It's well established in patent law that when a prima face case of obviousness has been established and rational and evidence tending to show inherency set forth the burden of persuasion is on applicants to show that the claimed product exhibited unexpected properties compared with that of the prior art. *Ex parte Gray*, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989).

further in view of either one of **Yamamoto et al** (US 6638648) and **Takano et al** (US 6356406).

Neither **Lambeth et al** nor **Futamoto et al** specify a product produced by the plating process as disclosed. However plating is plainly a matter of choice known in the art as evident from both **Yamamoto et al** and **Takano et al**. Furthermore, **Yamamoto et al** and **Takano et al** teach it is effective when applying the instant claimed material (*Cu*) over a *Si* substrate - col. 13 lns 56 - 61 of **Yamamoto et al** or col. 13 ln 61 of **Takano et al**.

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to adopt **Yamamoto et al** or **Takano** product of plating for a magnetic recording medium. One skilled in the art would have been motivated to adopt the **Yamamoto et al** or **Takano** product for magnetic medium with the expectation of increasing the density and precision of the recording media (**Yamamoto et al** col. 1 lns 13-15 and 45-50 or **Takano** col. 1 lns 30-35).

Other References

- **Yamada et al** (US 2001/0017833) is cited as showing the equivalence of 'ionic plating' and sputtering for deposition of metals and metal alloys in the art - paragraphs 0144, 0145, 0152.

- **Oikawa et al** (US 2002/0058160) is cited as being of interest demonstrating a Ni metal alloy underlayer in a perpendicular magnetic recording disk medium having a single crystal Si substrate – Examples and paragraph 0101.
- **Abarra et al** (US 6753101) is cited as being of interest demonstrating a Ni metal alloy underlayer in a perpendicular magnetic recording disk medium having a single crystal Si substrate – see Fig.9.
- **Kanbe et al** (US 6403240) is cited to further illustrate the Ag on a Si substrate - col. 7 lns 40-45.
- **Suzuki et al** (US 5143794) is cited as being of interest demonstrating a Cu metal in a perpendicular magnetic recording disk medium having a Si substrate –col. 12 lns 28-30.
- **Futamoto et al** (US 2002/0118477) is cited as being of interest further showing Cu over a Si substrate – layer 12a.
- **Ikeda et al** (US 2002/0068199) is cited as being of interest further demonstrating plating over the substrate – col. 13 lns 56 – 60.
- US 4376963 and 4689260 are cited as equivalent to IDS references 4 and 3

CONCLUSION

The claims are 1 to 12.

- Restriction has been required.

  Claims 1 and 2 have been elected and examined on the merits

- No claim has been allowed.

INQUIRES

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Louis Falasco whose telephone number is (571)272-1507. The examiner can normally be reached on M-F 10:30 - 7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (571)272-1516. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LF
07/04

STEVAN A. RESAN
PRIMARY EXAMINER